

COOLING CIRCUIT WITHIN A TURBINE NOZZLE AND METHOD OF  
COOLING A TURBINE NOZZLE

ABSTRACT OF THE DISCLOSURE

[0019] A cooling circuit is provided within a turbine nozzle to help increase turbine efficiency. The turbine nozzle includes first, second and third cavities, an outer band, and an inner band. The cooling circuit contains an inlet receiving cooling medium flow, and a first duct insert disposed in the second cavity. The first duct insert receives the cooling medium flow via the inlet and duct flows the cooling medium flow to a bottom of the second cavity. An impingement insert is disposed in the first cavity that receives the cooling medium flow from the first duct insert. A first impingement plate is disposed within the outer band defining an outer band cooling path within the outer band. The outer band cooling path receives the cooling medium flow from the first cavity. A second cavity cooling path is defined between the first duct insert and a second cavity wall, where the second cavity cooling path receives the cooling medium flow from the outer band cooling path. A second impingement plate is disposed within the inner band and defines an inner band cooling path within the inner band. The inner band cooling path receives the cooling medium flow from second cavity cooling path. Finally, a second duct insert is disposed in the third cavity and defines a third cavity cooling path between the second duct insert and a third cavity wall. The third cavity cooling path receives the cooling medium flow from the inner band cooling path.